



Waterford Institute of Technology  
INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE

*MSc. Enterprise Software Systems*

# **Module: Enterprise Web Development**

URL: <https://wit-computing.github.io/enterprise-web-2019/>

## **Overview**

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**Dr. Frank Walsh ([fwwalsh@wit.ie](mailto:fwwalsh@wit.ie))**

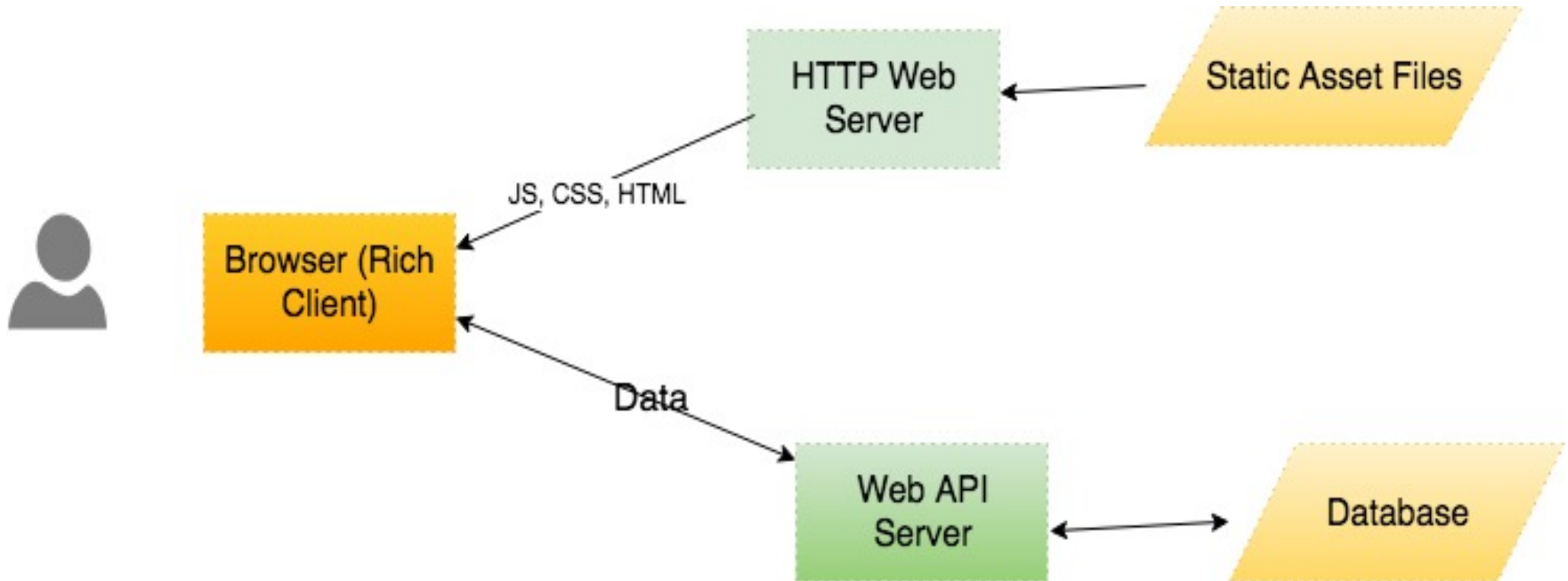
*TL;DR*

**Design and develop modern, secure  
Web apps using Agile practices**

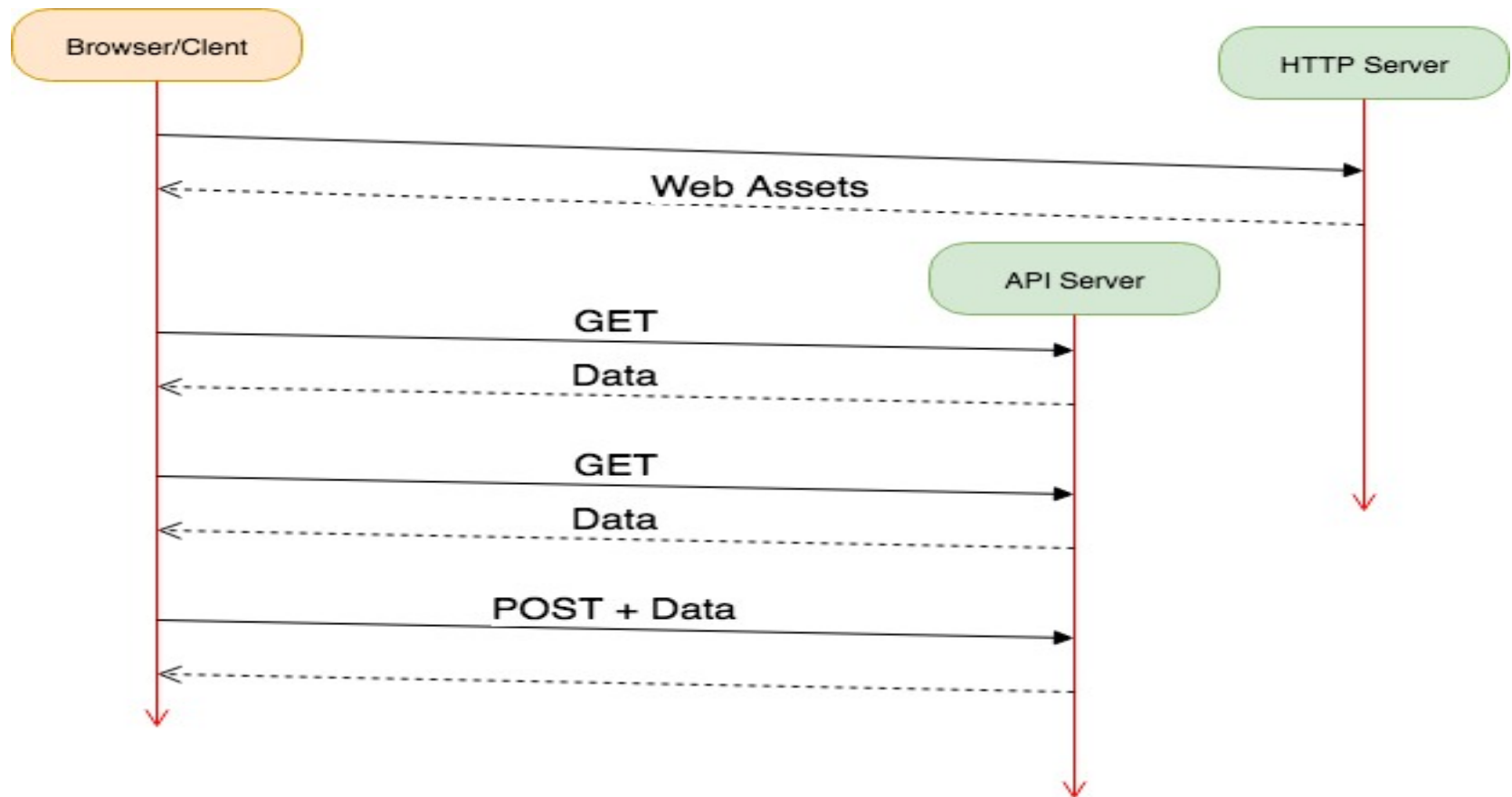
# Agenda

- Context
- This module's focus
- Software installation requirements

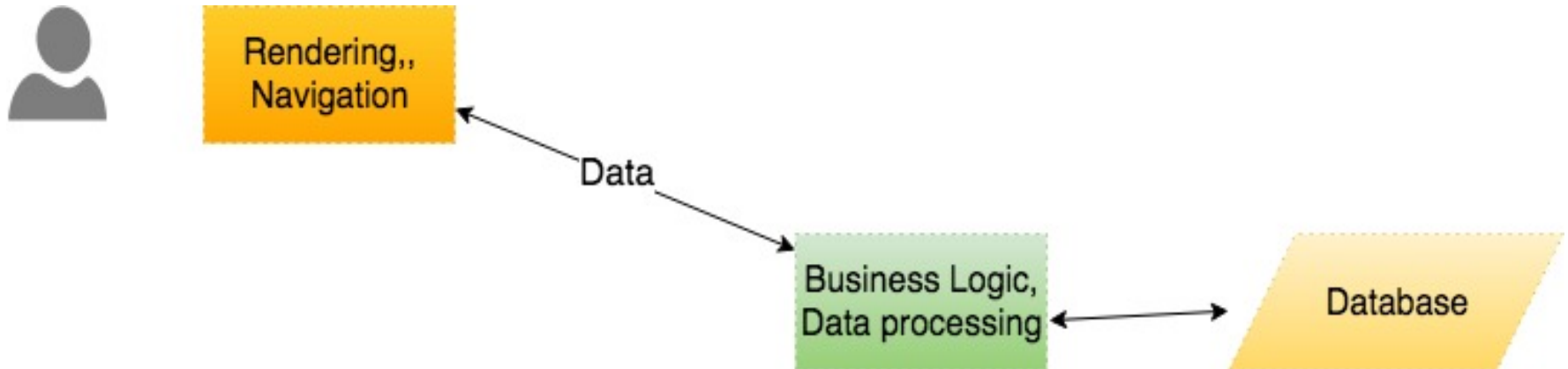
# Modern Web Apps - Architecture



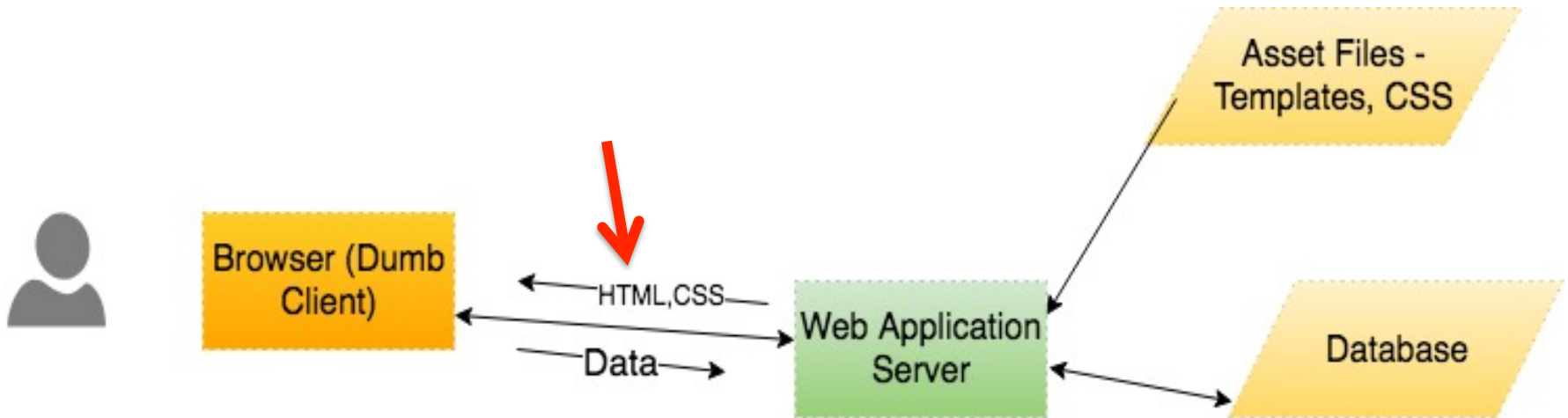
# Modern Web Apps – HTTP Communications flow



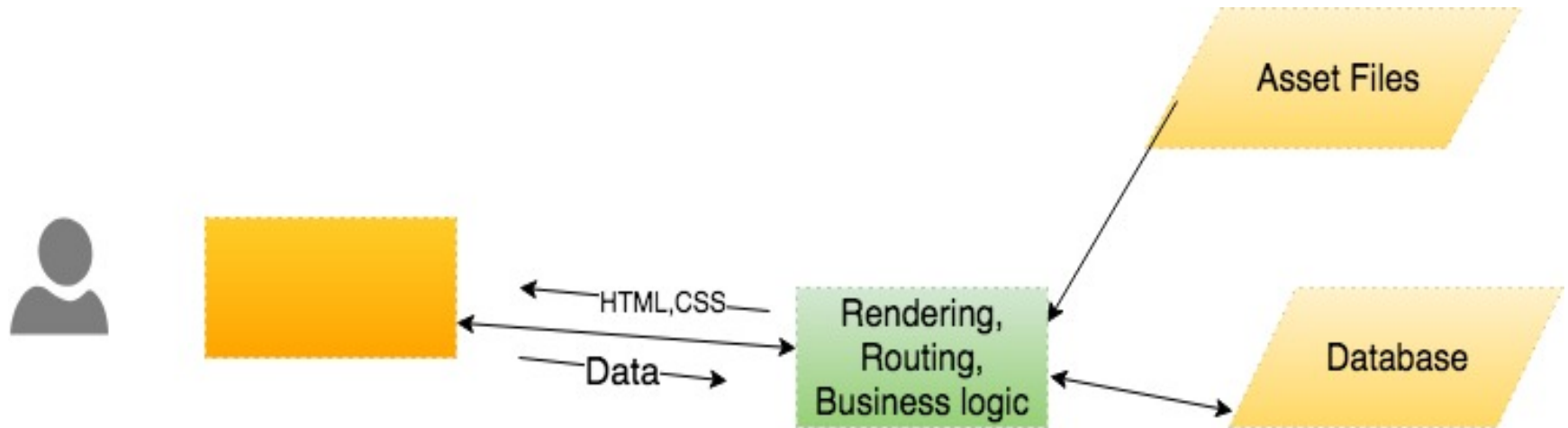
# Modern Web Apps – Sub-system roles



# Traditional Web Apps – Architecture

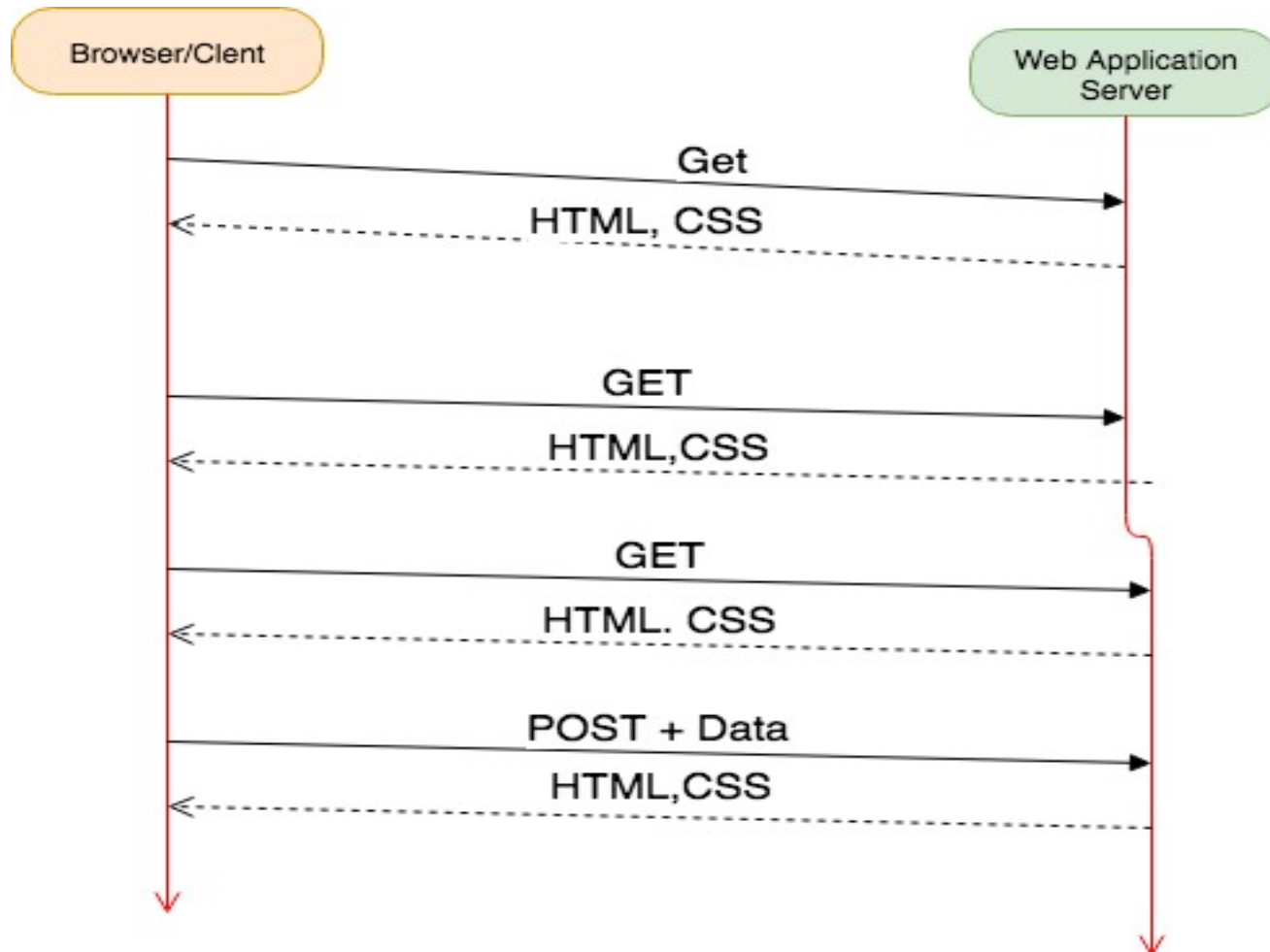


# Traditional Web Apps – Sub-system roles.





# Traditional Web Apps – HTTP Communication flow.



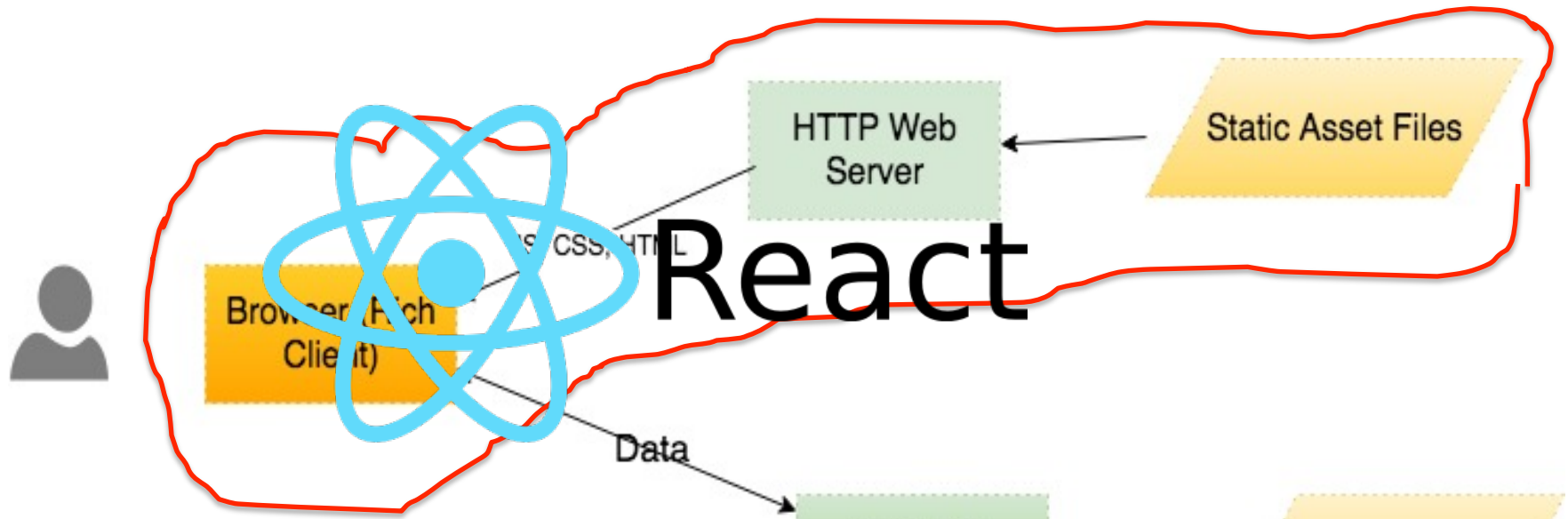
# Modern Web Apps.

1. **Early Examples: Gmail (2004), YouTube (1<sup>st</sup> generation)**
  - **Disadvantage:**
    - **Poor developer experience (DX) – code bloat; poor maintainability; browser inconsistencies.**
    - **Lacked addressability (Key principle of the web).**
2. **Jquery – A cross-platform JavaScript library to simplify the client-side scripting of HTML pages. (2006)**
  - **Adv.: Better developer productivity; reduced code bloat**
  - **Disadvantages –**
    - **Lacked Addressability.**
    - **Poor code maintainability (spaghetti code).**
3. **Single Page App (SPA) *frameworks*. (2010 ish)**
  - **Support addressability; Improved DX; Improved maintainability.**

# Agenda

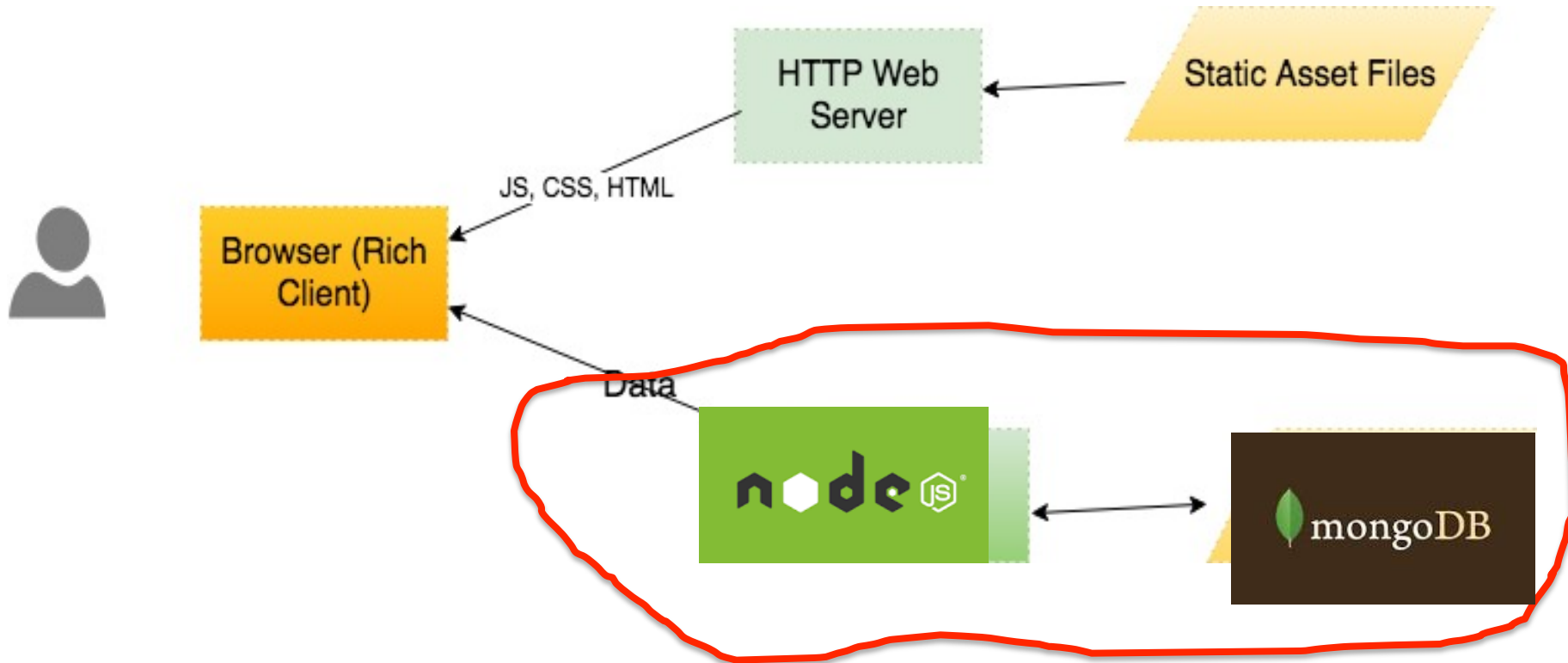
- Context. ☒
- This module's focus

# Modern Web Apps



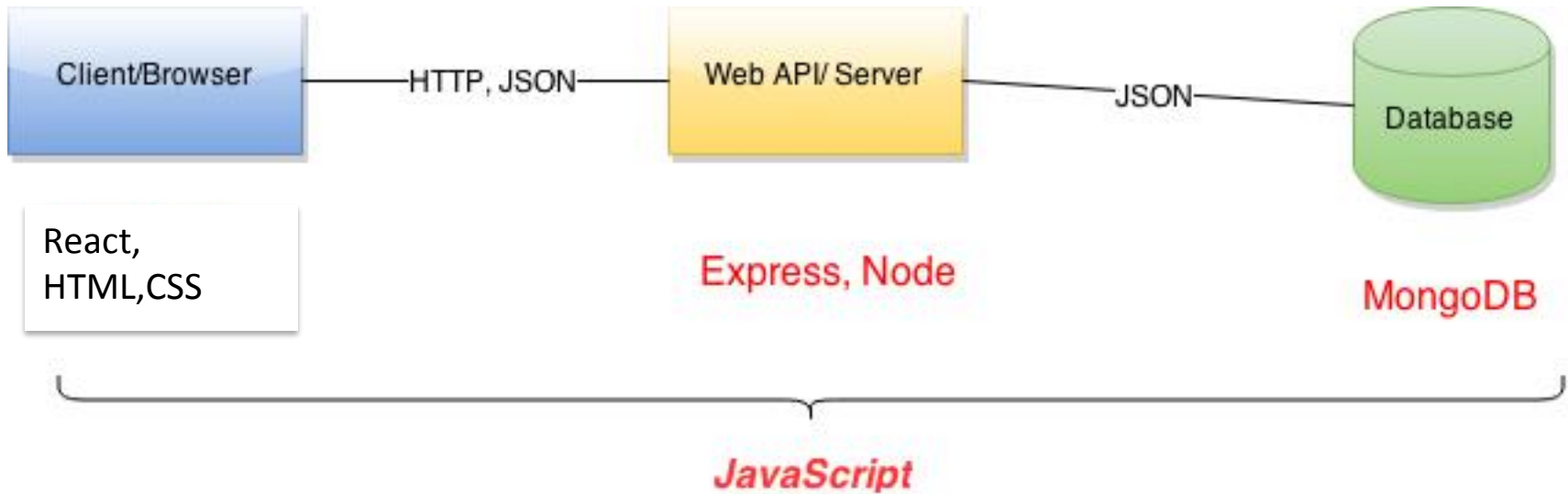
A JavaScript library for building user interfaces

# Modern Web Apps



# Modern Web App architecture.

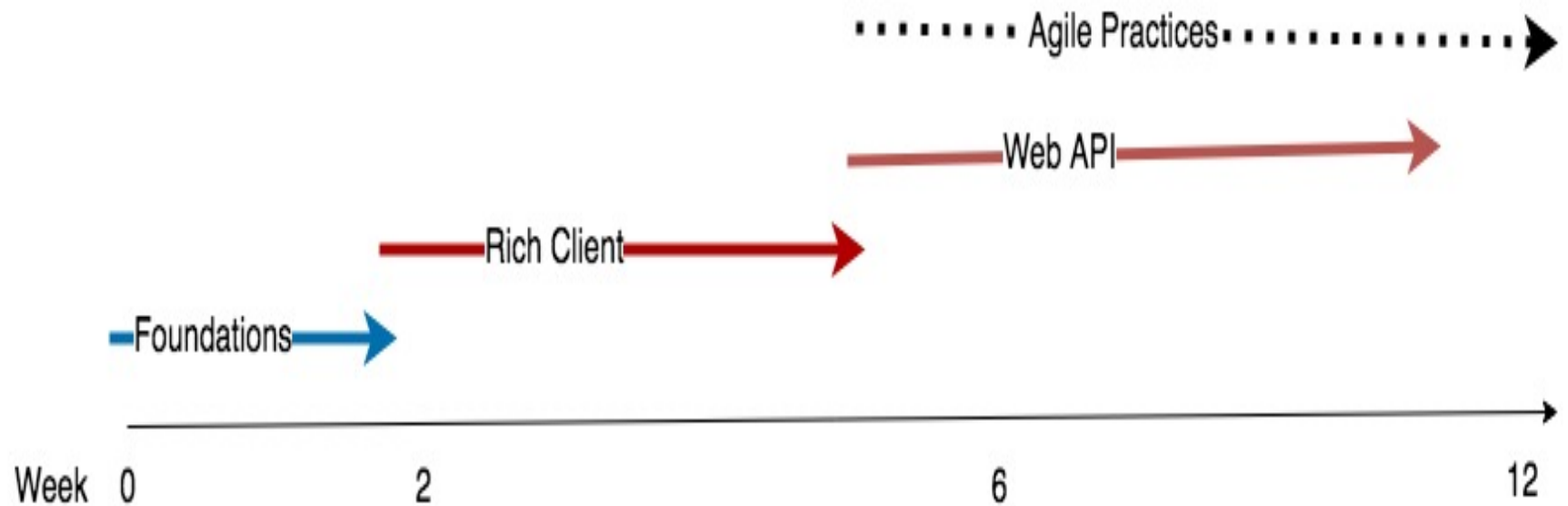
(Mongo, Express, React, Node)



# Agenda

- Context. ☒
- This module's focus
  - Single Page Apps, using React ☒
  - Web APIs, using Node and MongoDB ☒
  - Related Agile support tasks: ☒
    - E.g. Automated testing, Continuous Integration
- Software Installation Requirements

# Outline schedule



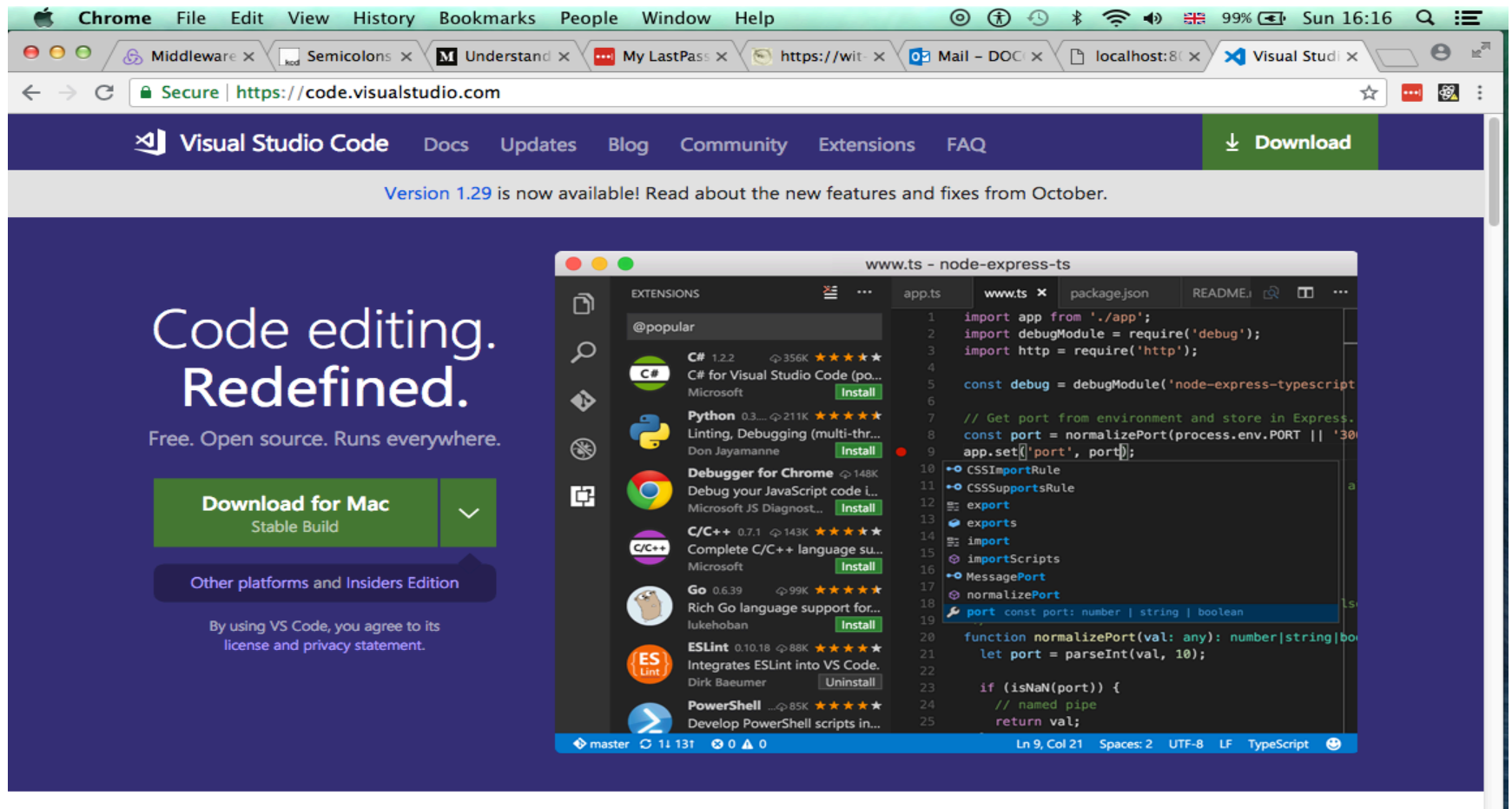


# Agenda

- Context. ☒
- This module's focus
  - Single Page Apps, using React ☒
  - Web APIs, using Node and MongoDB ☒
  - Related Agile support tasks: ☒
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- Software Installation Requirements

# Text Editor

(Not a heavyweight IDE, thankfully)



# Node.js

(A JavaScript runtime platform)

Chrome File Edit View History Bookmarks People Window Help

Middlew... Semicolo... Understa... My LastP... https://w... Mail - DC... localhost:... Node.js Storyboo...

Secure | https://nodejs.org/en/

node

HOME ABOUT DOWNLOADS DOCS GET INVOLVED SECURITY NEWS FOUNDATION

Node.js® is a JavaScript runtime built on Chrome's V8 JavaScript engine.

November 2018 security releases available, upgrade now

Download for macOS (x64)

10.14.1 LTS  
Recommended For Most Users

11.x Current

Other Downloads | Changelog | API Docs

Or have a look at the [Long Term Support \(LTS\)](#) schedule.

Sign up for [Node.js Everywhere](#), the official Node.js Monthly Newsletter.

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# Git

**git** --distributed-even-if-your-workflow-isnt

Git is a **free and open source** distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

Git is **easy to learn** and has a **tiny footprint with lightning fast performance**. It outclasses SCM tools like Subversion, CVS, Perforce, and ClearCase with features like **cheap local branching**, convenient **staging areas**, and **multiple workflows**.

 **Learn Git in your browser for free with Try Git.**

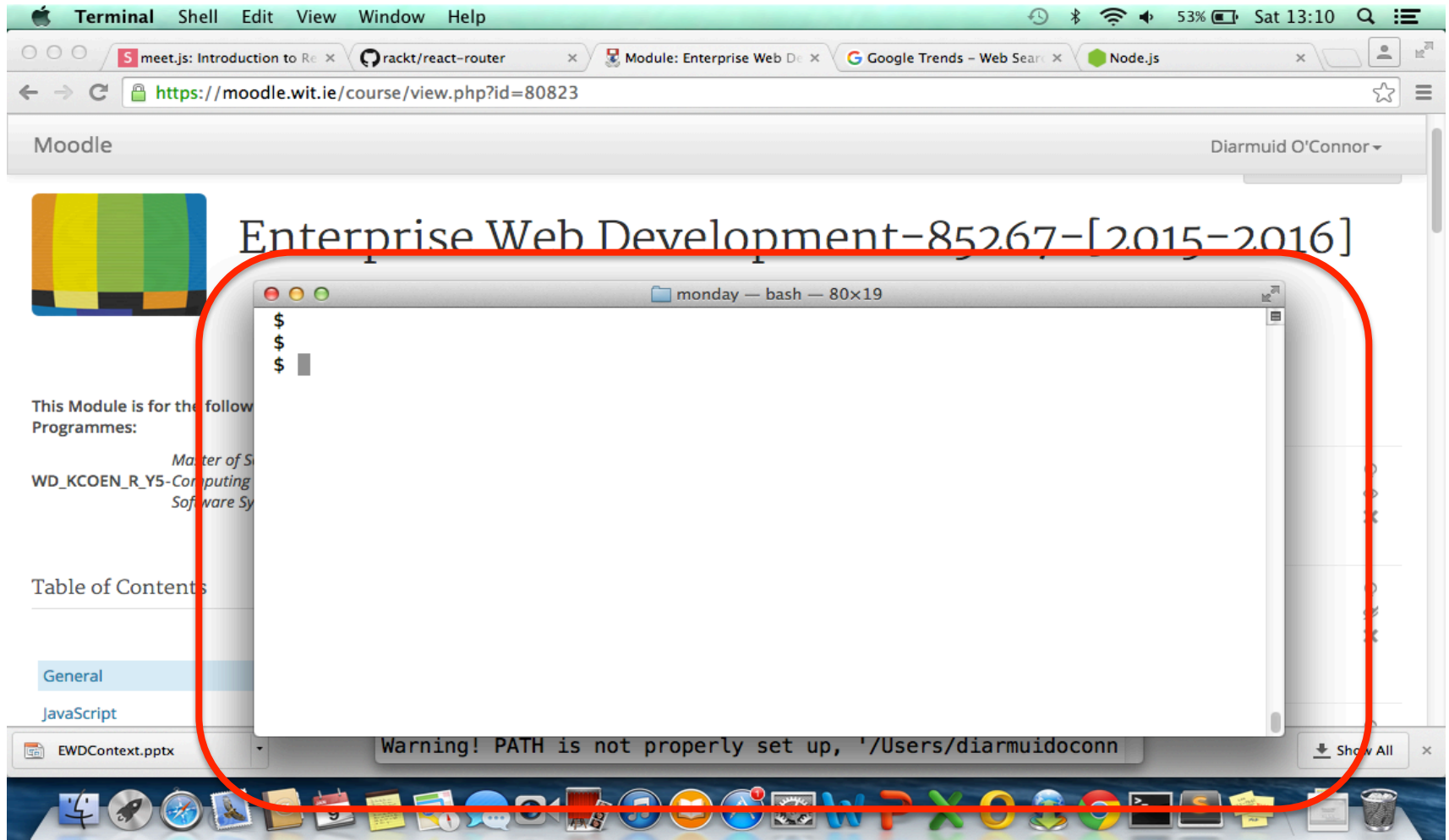
**About**  
The advantages of Git compared to other source control systems

**Documentation**  
Command reference pages, Pro Git book content, videos and more

**Latest source Release**  
**2.15.1**

Line 33, Column 76  
51 console.log(acar.owner + " drives a " + acar.type.make);  
52  
35 misspelled words Spaces: 4 Markdown

# DOS/Terminal window.



# DOS commands

- The cd command (Change directory)

`$ cd`      *(Show pathname of my current directory)*

`c:\Users\diarmuid`

`$ cd webdev`      *(Relative pathname)*

`$ cd c:\Users\diarmuid\webdev`      *(Absolute pathname)*

`$ cd ..`      *( c:\Users\diarmuid )*

`$ cd webdev\lab01`      *( c:\Users\diarmuid\webdev\lab01 )*

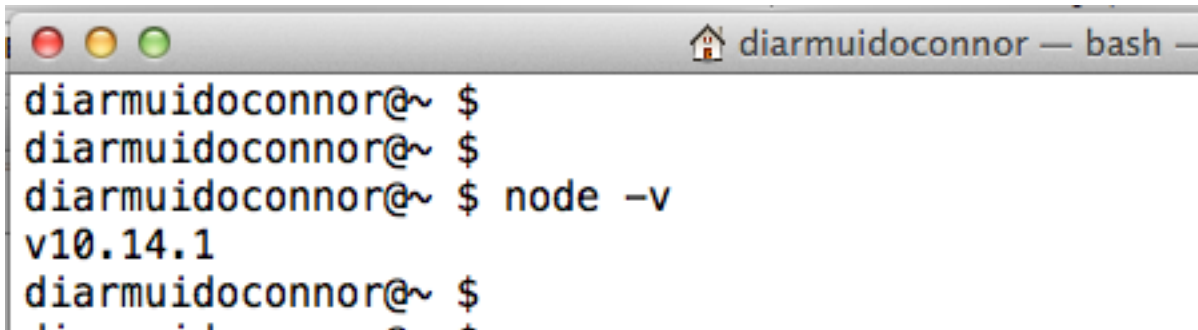
`$ cd ..\lab02`      *( c:\Users\diarmuid\webdev\lab02 )*

`$ cd ..\..`      *( c:\Users\diarmuid\ )*

\$ represents the terminal prompt – not part of command.

# DOS commands

- To check node.js installation using DOS terminal:



```
diarmuidoconnor@~ $  
diarmuidoconnor@~ $  
diarmuidoconnor@~ $ node -v  
v10.14.1  
diarmuidoconnor@~ $
```

- Your version may be slightly newer.

# Summary.

- **Two models of web apps:**
  - **Traditional – Server Side Rendering (SSR)**
  - **Modern – Client Side Rendering (CSR)**
- **CSR model has evolved:**
  - **Unmaintainable JS codebase to SPA framework based codebase**
  - **No addressability to addressable**
- **Server-side**
  - **From SSR web applications to Web APIs**
  - **REST style interface.**
- **NoSQL databases.**
- **Agile development processes.**



